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BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON, D.C. 20268–0001

PERIODIC REPORTING (PROPOSAL TWO)	Docket No. RM2018-5

REPLY COMMENTS OF THE UNITED STATES POSTAL SERVICE REGARDING PROPOSAL TWO
(August 2, 2018)

Initial comments in this docket were filed on July 26, 2018 by UPS and by the Public Representative. The Postal Service hereby offers its reply comments.[1] As explained below, the merits of Proposal Two are sound, and criticisms offered in the comments of the parties provide no valid basis to impede Commission approval of the proposal.

In conjunction with these Reply Comments, the Postal Service today also files USPS-RM2018-5/4, presenting coefficients of variation (CVs) for the cost estimates. These were previously discussed in the response to Question 16 of ChIR No. 1, filed June 29, 2018, and are compared to the FY17 CVs, which have been adjusted to reflect the reduced sample size from sampling only 2 instead of 4 quarters. The comparison, in column O of workbook CV_pub_ClusterComparison.xlsx, demonstrates that CVs from IOCS-Cluster are smaller than the current methodology for almost every cost estimate. The median of the percentage reduction in CVs is 30 percent, indicating a significant improvement in precision.

[1] A separate motion has been submitted by the Postal Service today seeking leave to file these reply comments.

An exception to the general decrease in CVs is the cost estimate for street time, where there are far fewer readings in the afternoon in IOCS-Cluster. Nevertheless, despite a 45 percent reduction in the number of street readings, the CV for the cost estimate is still only 0.5 percent. The other cost estimates for which IOCS-Cluster CVs exceed non-cluster IOCS are for First-Class Single Piece and Presort Letters and for First-Class Single Piece Flats. These products had the largest decreases in their shares of direct tallies, which reduce the precision of their cost estimates, but those estimates are still amply precise.

United Parcel Service

The comments of UPS cover a variety of subjects, but UPS ultimately supports approval of Proposal Two. UPS Comments at 1, 11. On page 8, however, UPS expresses concern about possible misclocking in TACS, citing a report from the Office of the Inspector General that 3 percent of Sunday hours were incorrectly charged. However, following the Commission's suggestion in Order No. 4399, the Postal Service intends to treat all carrier Sunday and holiday workhours as SPR even if clocked to letter routes or to supervisor MODS operation codes.[2] Proposal Two will apply the same volume variability factor (100 percent) and the same distribution key to all hours. Therefore, contrary to what UPS implies, there will be no impact due to any misclocking on Sundays.

[2] Docket No.RM2017-9, Order No. 4399 (February 6, 2018), p. 18.

Public Representative

The Public Representative identifies two issues: a) an allegation that the carriers selected at the second stage of sampling are not representative of the population; and b) that the proposal for costing Sundays and holidays is inadequate and needs further analysis.

First, the Public Representative alleges that the selection of the carriers to sample within the offices is not based on probability, and therefore the sampled carriers are not representative of all carriers. In particular, the claim is made that "since the sample of six carriers does not reflect the population of carriers," the sample "would not represent all crafts-CAG combinations, and routes by type and size." PR Comments at 11. However, this claim is incorrect. The second-stage selection probability that a particular individual carrier is selected for sampling in large zones is equal—specifically 6/n, where n is the number of carriers working on the test day.[3] While no particular sample draw will (or can, for any sample size short of a census) be perfectly reflective of the carriers for the sampled zone, random selection ensures that the samples will not systematically over- or under-represent various characteristics of the carrier populations.

Another way to see this is to suppose that only one carrier is randomly selected per sampled zone-day, and only one reading is conducted at a random time. In this case, the data from all readings across all zones and all reading times would be representative of the population. This alternative design would indeed be similar to the

[3] Consequently, if census workhours were not available, it would still be possible to calculate the inverse probability, (n/6), and use this to weight the sample readings that were obtained. However, the availability of control total hours obviates the necessity of developing this pure sample-based estimation approach.

current non-cluster IOCS design. However, since there would only be one reading per "cluster" test, it would require many more tests to obtain similar levels of precision, and the costs of accessing each "cluster" for a single reading would make the cost of on-site data collection prohibitive. Nevertheless, the sample data from this alternative would be representative of the population. Increasing the number of carriers subsampled in each zone would be important if the objective were to obtain measures of the breadth of workload within each office. However, IOCS is a national, rather than regional or local, sampling system. Note that increasing the number of individuals sampled would not change the number of readings actually conducted in a morning. The constraint is that a data collector is limited in the number of readings that they can record within a block of time.

Many of the issues that the Public Representative raises about representativeness of the IOCS-Cluster procedures are, in actuality, concerns about the efficiency of cluster sampling. For example, the Public Representative, citing a Statistics Netherlands handbook, contends on page 9:

> Common sampling practice requires that all elements within each cluster are investigated until "the clusters are fairly homogeneous," meaning that "the elements within a cluster very closely resemble each other." In case of homogenous clusters, in the second stage, the estimators draw a sample of SSUs, but it is still important to determine the sample size considering "the precision that is required for an estimator." Id. at 43. Clusters of carriers under Proposal Two, however, are not homogeneous, since SSUs (carriers) differ by CAG, craft, as well as size and type of their assigned route.

However, the Public Representative's source, in context, is simply discussing situations in which cluster sampling (with or without second-stage sampling) may or may not be efficient relative to other methods:

> The cluster sample discussed above always involved investigating all elements of every selected cluster. It was shown that cluster sampling is not very efficient when *the clusters are fairly homogenous.* If *the elements within a cluster very closely resemble each other*, it may actually be a waste of time and money to investigate all elements; the same information could have been obtained by examining just a couple of elements. In such cases cluster sampling will perform fairly poorly, and it may be worthwhile to take a sample from the selected clusters.[4]

Moreover, the Postal Service did consider the required precision of the estimates -- among other data quality concerns -- in developing Proposal Two. By increasing the number of non-stop readings relative to traditional IOCS, Proposal Two would have been expected to reduce CVs. Petition at 8-9. As discussed above and as shown in USPS-RM2018-5/4, IOCS-Cluster does actually improve CVs for most product cost estimates, and it provides acceptably low CVs for other estimates. Therefore, the concerns of the Public Representative regarding the degree of homogeneity within zones are without merit.

A puzzling comment from the Public Representative on page 10 is that "[a]lthough taking readings from the same six carriers every five minutes is practically convenient, surveying different carriers would allow for better representation of carriers (by CAG and craft) and their activities in a tested zone." This is perplexing, because all readings at one office are in the same CAG. The claim that sampling six carriers is inadequate seems to imply inadequacy of sampling within one zone, but no change in carrier sub-sampling within a zone would change the results by CAG. It may be that the Public Representative would like to see separate sampling rates of offices by CAG, similar to current IOCS. However, current IOCS has a panel of offices, and therefore

[4] Camstra Astrea and Knottnerus Paul, "Sampling Theory. Sampling design and estimation Methods": Statistics Nederlands, 2012 at 38, emphasis added.

sampling rates within a CAG differ to account for the differences in the proportions of employees in panel offices compared to the frame. This is not required in the IOCS-Cluster design, in which all zones are eligible for sampling, and they are sampled in proportion to their size as measured in actual workhours, rather than by a proxy like CAG that is a measure of revenue rather than cost.

Table 1 below displays the cost per tally separately for each CAG within each craft, route group and time block combination. If the proportions of tallies selected by IOCS-Cluster were very different from those that would have been selected separately by CAG, then the costs per tally would also be very different. However, for regular letter routes in the morning, these costs are, in fact, quite homogeneous across the CAGs. It is the smallest CAGs, G and H, for part-time carriers where the cost per tally does differ the most, but these account for a tiny proportion of total carrier costs and have the fewest tallies. There is more variation within the Special Purpose Route group for a number of reasons, such as variation in the inclusion of LDC 23 and 27 hours in DOIS and different percentages for the usage of SPR carriers across CAGs. However, the overall pattern of similar costs per tally supports the claim that that IOCS-Cluster samples CAGs adequately.

Table 1: Accrued Costs per Morning Tally

		Craft_Grp				
		Full-Time		Part-Time		
RGroup	Summary CAG	Reading Count	Avg Reading Cost ($000)	Reading Count	Avg Reading Cost ($000)	Percent of Cost
REG	A/B	18,735	$54	2,689	$30	37.0%
	C	12,273	$52	1,627	$31	23.2%
	D	5,897	$52	592	$21	10.9%
	E	6,123	$58	1,566	$30	13.7%
	F	3,089	$58	1,374	$28	7.3%
	G	1,233	$62	217	$46	2.9%
	H	124	$59	59	$69	0.4%
REG Total		47,474	$54	8,124	$30	95.4%
SPR	A/B	389	$141	200	$60	2.3%
	C	60	$425	29	$230	1.1%
	D	54	$199	18	$146	0.5%
	E	66	$174	35	$123	0.5%
	F	38	$106	8	$304	0.2%
	G	3	$333	7	$25	0.0%
	H	9	$3	3	$6	0.0%
SPR Total		619	$174	300	$94	4.6%
Morning Total		48,093	$56	8,424	$32	100.0%

The Public Representative is also concerned about the empty cells in the estimation process, alleging on page 12 that the "existence of 'empty cells' is largely due to the Postal Service's non-compliance with principles of sampling in the second and third stages when it selects SSUs (carriers for observation and time when to conduct readings)." Empty cells, however, occur primarily when there are no tallies for Special Purpose Routes (SPR) for either craft subgroup within a CAG while at the same time there are non-zero workhours in TACS. This typically occurs only for smaller CAGs, and is no valid basis for concern.

Cost estimates for afternoon readings are alleged by the Public Representative at page 13 to be another source of concern because IOCS-Cluster "…would significantly decrease the number of non-stop afternoon readings per quarter…" and "is not able to estimate workhours by CAG, craft and route types because there are insufficient afternoon tallies." However, the primary function of IOCS is to estimate the percentages of labor time accruing to mail products and activities, not to estimate total costs by route type. In the afternoon, 97 percent of carrier time is off the premises and on-street. Despite the greatly reduced number of afternoon non-stop tallies, as discussed above, the CV for the estimate of street time cost is still only 0.5 percent, more than sufficiently precise for its intended purpose. Furthermore, in the 3 percent of their afternoon time on the premises, carriers are not casing mail and there are very few direct tallies. Increasing the IOCS-Cluster afternoon sample size simply to maintain the quantity of data obtained previously does not optimize the usage of data collection resources.

Regarding the estimation of variances and CVs, the Public Representative states on page 15 that "there are known methods of estimating variances". However, the formulas in the references provided are not appropriate for situations involving post-stratification, cost weight redistribution (of mixed mail tallies) and with separate control totals, which are a more complicated situation than the textbook example.[5]

In addition, the Public Representative claims on page 15 that "[i]n this situation bootstrapping cannot be a valid method to estimate variances and CVs for the proposed IOCS-Cluster sampling design." However, as demonstrated above, IOCS-Cluster is a

[5] See Lohr, Sharon L., Sampling: Design and Analysis, Duxbury Press, 1999, p. 148.

probability-based sampling system that is representative of the population, and therefore this claim is not correct. Contrary to what the Public Representative suggests, utilization of bootstrapping under these circumstances is entirely valid.

In summary, the Public Representative makes claims that IOCS-Cluster does not follow statistical principles, is not representative of the population, and therefore that the estimates it generates are invalid. Her conclusions, though, are based primarily on the premise that the subsampling of only 6 carriers within a zone is not representative. Because this premise is incorrect, her later conclusions -- that cost estimates are incorrect, that post-stratification procedures are faulty, and that the bootstrap approach is invalid -- do not follow. In fact, IOCS-Cluster has a statistically valid design, and the resulting reduction in CVs demonstrates that it is successful as an improvement over non-Cluster IOCS.

b) Sunday/holiday

The second major concern for the Public Representative is the attribution of costs for Sundays and holidays. In particular, as noted on pages 16-17, she "…does not support the Postal Service's decision to attribute all Sunday/holiday costs for city carriers to Parcel Select." and "… at least consider the known percentages of different mail products delivered on Sundays/holidays…" While Parcel Select was assigned all costs for the initial evaluation of the IOCS-Cluster proposal, as noted on page 9 of the Proposal Two Petition, the Postal Service intends to use scan data from PTR in the actual implementation. Moreover, cost impacts incorporating the PTR distribution were provided in USPS-RM2018-5/NP5. Since the Commission has had an opportunity to

review this material, it could accept that procedure in this docket along with Proposal Two, rather than require a separate additional proposal.

The Public Representative also expresses concern on page 17 that some mailpieces that do not have scannable barcodes will be delivered on Sundays, but may not be included in the PTR distribution. However, the volume of such mail is believed to be very small. When this occurs, it is generally because the carrier is already delivering a parcel to a stop with which they are familiar, and brings along mail that happens to be available. An argument can be made under these circumstances that the bulk of delivery workhours is caused by the delivery of parcels, and that the additional time caused by these non-barcoded letters or flats is therefore even less significant than the volume. The Postal Service agrees that elucidating these relationships, together with analyses of appropriate volume-variability factors for Sundays and holidays would require additional study, but that the magnitude of the additional accuracy in cost estimates is not sufficient to challenge acceptance of Proposal Two.

Conclusion

In accordance with the above discussions, the Commission should not be deterred by the initial comments of the parties from approval of the proposal. Proposal

Two represents a major improvement relative to the established procedures for IOCS sampling, and should be approved.

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Respectfully submitted,

UNITED STATES POSTAL SERVICE

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